

What is claimed is:

1. A gear pump comprising:
a housing including an interior pumping chamber;
an inlet to the chamber;
an outlet from the chamber and spaced from the inlet;
a pair of rotating gears in the chamber, the gears including teeth which mesh during gear rotation, each gear being fixedly secured on a shaft having an axis of rotation; and
a pair of one-piece bearings located in the chamber and journalling one of first and second end portions of each shaft, the one-piece bearings providing precise alignment of the first and second end portions of the shafts and maintaining the shafts in parallel relation.
2. The gear pump of claim 1 wherein the one-piece bearings are manufactured from powdered metal.
3. The gear pump of claim 1 wherein each one-piece bearing has a generally oblong cross-section.
4. The gear pump of claim 1 wherein each one-piece bearing includes:
a top surface,
a bottom surface,
a pair of openings having center axes coincident with the axes of rotation of the shafts, and
first and second elongated sides, opposing ends of the first side being joined to corresponding opposing ends of the second side by a pair of arcuate ends.
5. The gear pump of claim 4 wherein the first elongated side is parallel to the second elongated side.
6. The gear pump of claim 4 wherein the first and second elongated sides are generally planar.

7. The gear pump of claim 1 wherein each gear is manufactured from powdered metal.

8. The gear pump of claim 7 wherein each gear includes an opening adapted to receive the shaft thereby allowing for self alignment of the teeth of the gears as the gears mesh.

9. The gear pump of claim 1 wherein each shaft includes an axial recess and each gear includes an axial groove dimensioned to receive a pin for preventing rotation of the gears on the respective shafts.

10. The gear pump of claim 1 wherein each shaft includes first and second grooves extending radially about the periphery of each shaft for receiving associated snap rings.

11. The gear pump of claim 1 wherein each gear is secured perpendicularly on each shaft.

12. A method of assembling a gear pump comprising the steps of:
providing first and second shafts having substantially constant diameter along their lengths;
advancing a gear over each shaft;
securing the gear to each shaft;
mounting a bearing on the shafts;
installing the bearing and shafts with gears mounted thereon into a housing of a gear pump.

13. The method of claim 12 comprising the further steps of preventing rotation of the gear relative to each shaft.

14. The method of claim 12 comprising the further steps of providing one-piece continuous bearings on each end of the shafts.

15. The method of claim 14 comprising the further steps of journaling each shaft in the one-piece bearings, the one-piece bearings providing precise alignment of the shafts.

16. The method of claim 12 comprising the further steps of forming each gear from powder metal whereby each gear has a substantially uniform composition throughout.

17. The method of claim 12 comprising the further steps of forming the bearing from powder metal whereby the at least one bearing is homogenous.